Claims

1. A device comprising:

a substrate (110; 510);

at least one resonator (130; 530) on the substrate, each resonator being resonant at a predetermined wavelength of electromagnetic radiation and configured to support a whispering gallery resonant mode in which electromagnetic radiation of the predetermined wavelength is concentrated in a region adjacent to the resonator circumference;

a waveguide (120; 520) on the substrate, coupled to the at least one resonator for guiding the electromagnetic radiation to the at least one resonator; and

a low refractive index region (260; 560) between each resonator and the substrate, the low refractive index region having a lower refractive index than a material of the resonator,

wherein the low refractive index region for each resonator has a width corresponding to a width of the region in which the electromagnetic radiation is concentrated.

~~2. The device of claim 1, wherein each resonator is configured to support a whispering gallery resonant mode in which electromagnetic radiation of the predetermined wavelength is concentrated in a region adjacent to the resonator circumference, and~~

~~wherein the low refractive index region for each resonator has a width corresponding to a width of the region in which the electromagnetic radiation is concentrated.~~

2. The device of claim 1, wherein the low refractive index region for each resonator has a width substantially equal to the width of the region in which the electromagnetic radiation is concentrated.

3. The device of claim 1 or 2, wherein the low refractive index region is an air gap (260) between the resonator and the substrate.

4. The device of claim 3, further comprising:

a support layer (232) on the substrate, supporting the resonator and laterally adjacent to the air gap.

5. The device of claim 4, wherein the substrate and the support layer are both formed of Indium Phosphide InP.

6. The device of claim 3, 4 or 5, further comprising:

an etch stop layer (212) on the substrate, between the substrate and the low refractive index region.